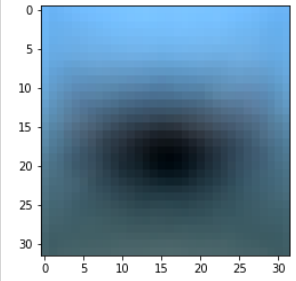
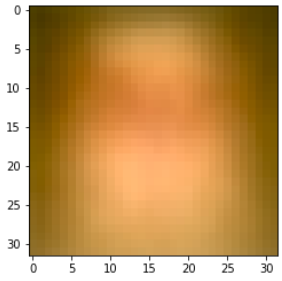
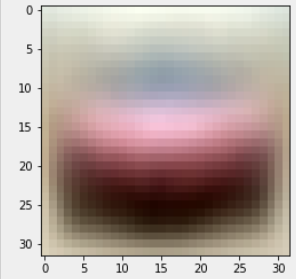
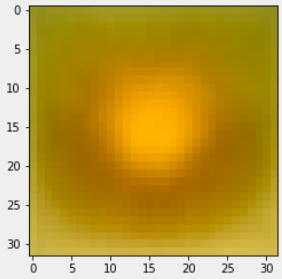
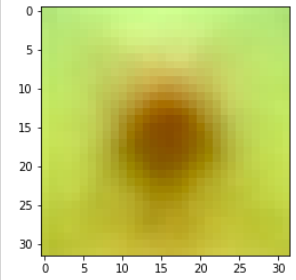
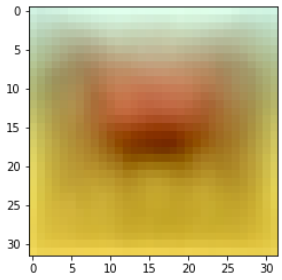
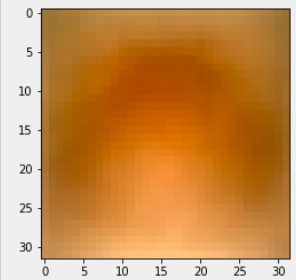
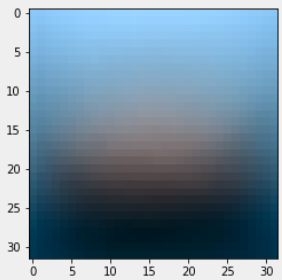
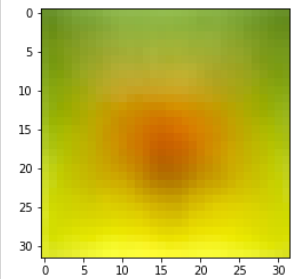
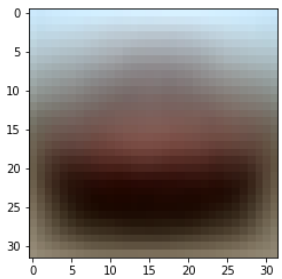
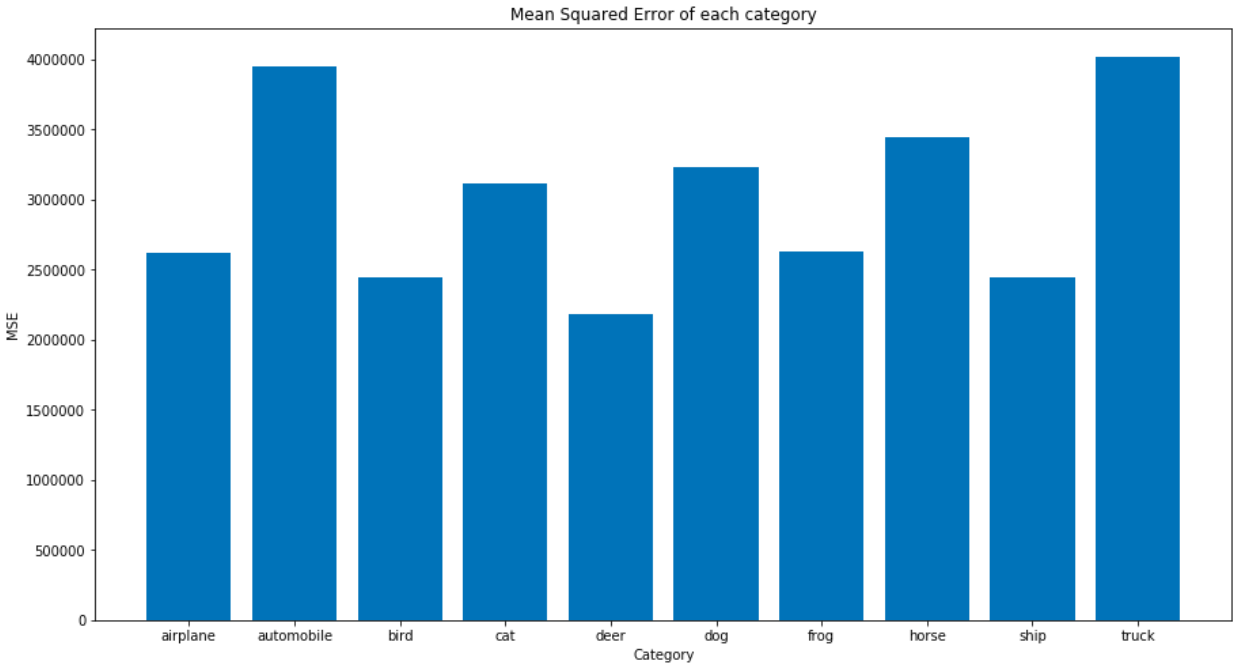
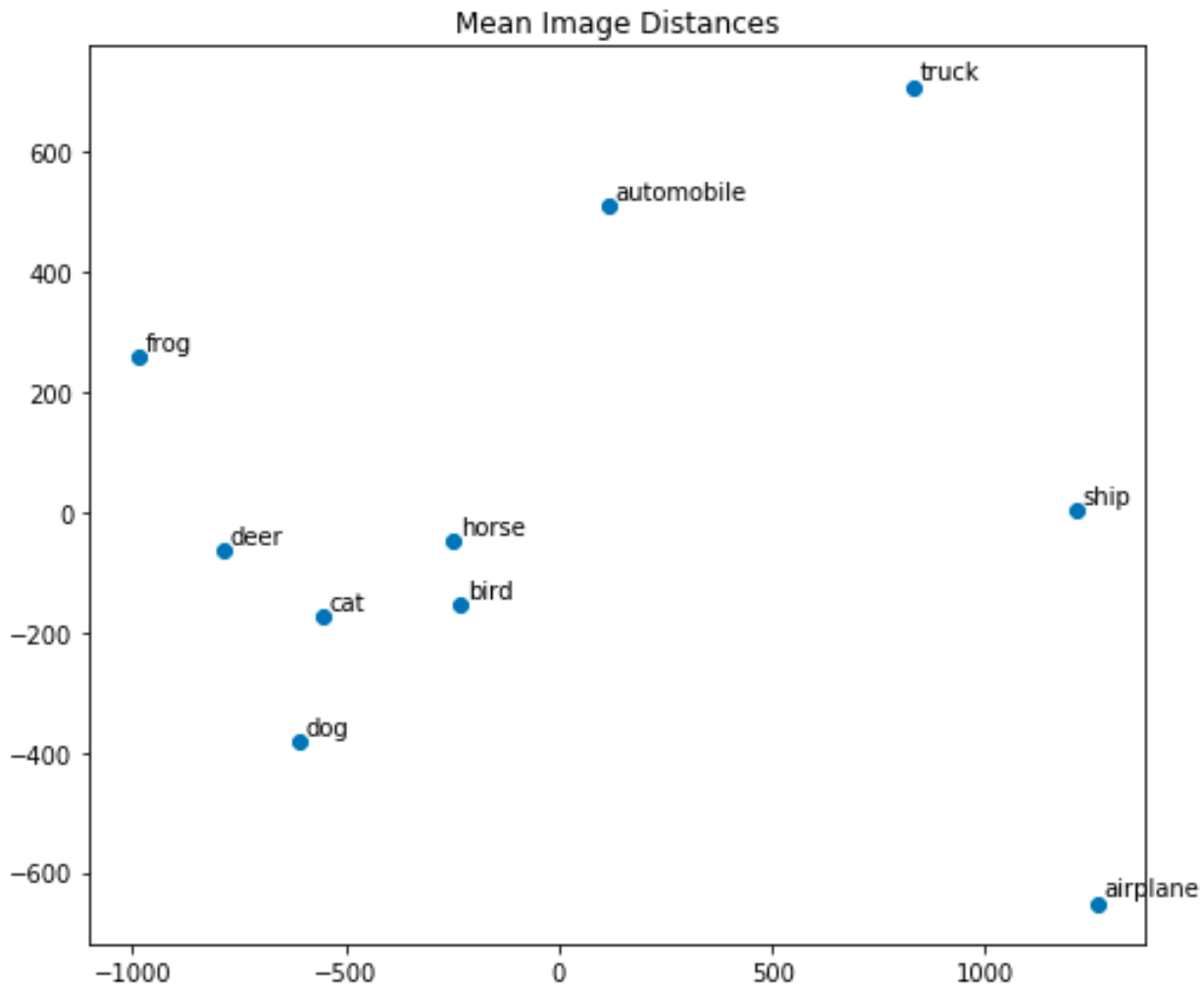
Homework 4 Report

Class	Image	Class	Image
airplane		dog	
automobile		frog	
bird		horse	
cat		ship	
deer		truck	

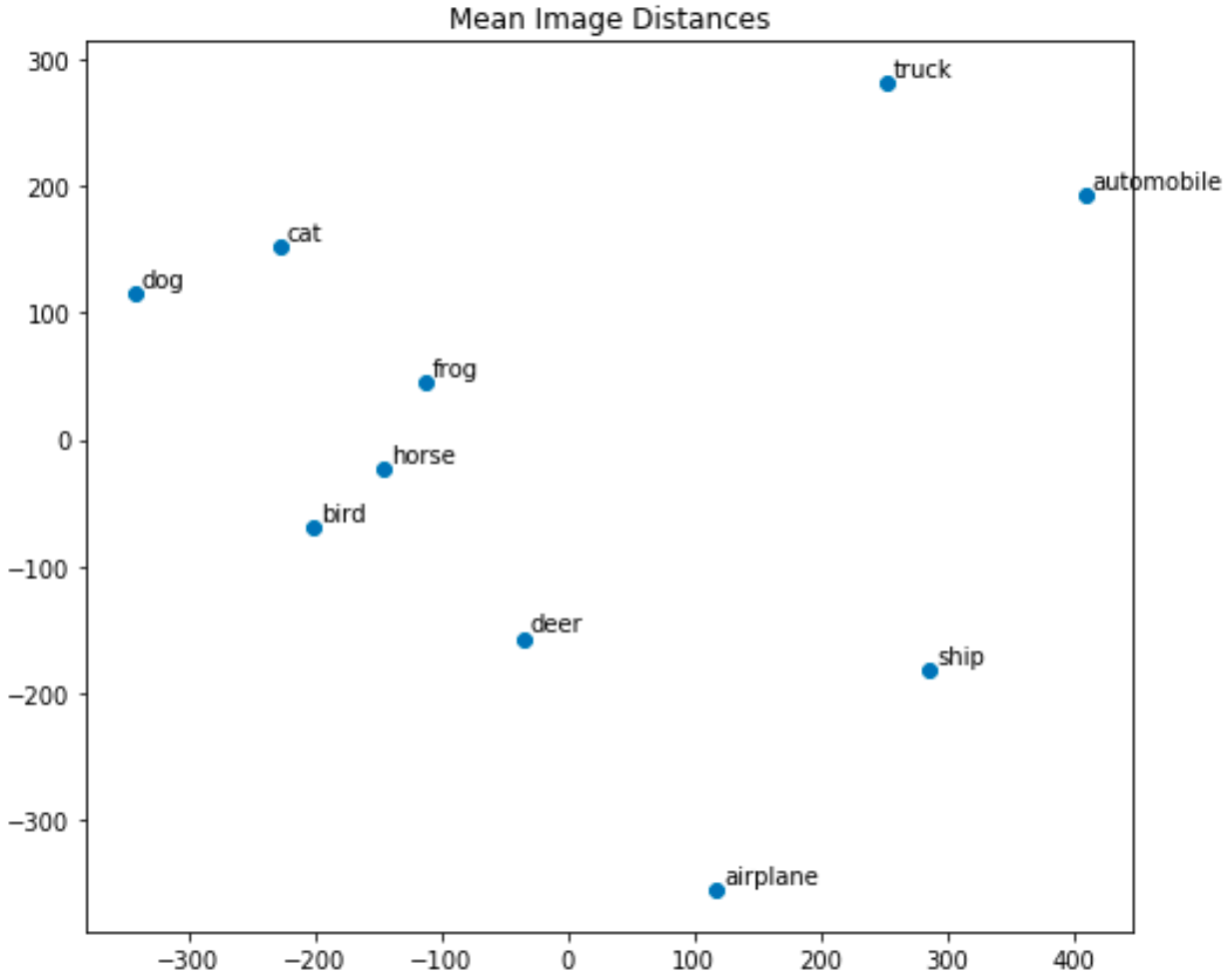
Page 2 A plot of sum-squared error from representing a class with the first 20 principal components of that class, for each class



Page 3 2D scatter plot obtained after performing principal coordinate using euclidean distance.



Page 4 2D scatter plot obtained after performing principal coordinate using similarity metric in part C.



The two scatter plots look differently, since the similarity methods are different. Euclidean distance is applied in the first part, by $distance = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$. In the second part, the similarity is measured as $similarity = \frac{E(A \to B) + E(B \to A)}{2}$, $E(A \to B)$ is the average error obtained by representing all images of class A using the mean of class A and the first 20 principal components of class B.

Citation:
https://stackoverflow.com/questions/35995999/why-cifar-10-images-are-not-displayed-properly-using-matplotlib
AMLbook-3-DEC-18.pdf